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NATA

LumCAT: 3-2054-A
Luminaire: 99.02.73.173+92.76.365.00
Report No: NATA0100
Test No: GC2018101104
LampCAT: CITIZEN CLU048
Lamp flux(lm): 3977.0
Number of Lamps: 1
Length(mm): 78
Phm Type: C

Voltage(V): 49.9000
Current(A): 0.5000
Power (W): 24.9500
PF: 0.0000
Ballast type: DC
Width(mm): 80
Height(mm): 0

Photometric Results

Lumens(lm): 3532.50
Efficiency(%): 88.82%
Lumens(lm)/Power(W): 142.07
Central intensity(cd): 13298.910
Maximum intensity(cd): 13298.910
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=23.0
 [C90/270]Total=23.0
Field angle(10%Imax): [C0/180]Total=59.9
 [C90/270]Total=59.9
Maximum s/h(1/2): C0_180=0.39 C90_270=0.39
Maximum s/h(1/4): C0_180=0.39 C90_270=0.39
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 89.13%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.261%

Equipment:
Temperature(°C): 25.0

Date: 2018/10/11
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.50

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	13298.906	12.727	12.727	.320%	.360%
2.0	13218.047	101.170	113.896	2.544%	3.224%
4.0	12848.906	196.569	310.466	4.943%	8.789%
6.0	11771.227	269.849	580.315	6.785%	16.428%
8.0	10271.461	313.511	893.826	7.883%	25.303%
10.0	8118.000	309.161	1202.987	7.774%	34.055%
12.0	6133.078	279.655	1482.642	7.032%	41.971%
14.0	4434.891	235.301	1717.943	5.917%	48.632%
16.0	3347.578	202.364	1920.307	5.088%	54.361%
18.0	2690.086	182.311	2102.618	4.584%	59.522%
20.0	2255.203	169.162	2271.78	4.254%	64.311%
22.0	1953.633	160.503	2432.283	4.036%	68.854%
24.0	1730.672	154.381	2586.664	3.882%	73.225%
26.0	1589.203	152.787	2739.451	3.842%	77.550%
28.0	1475.156	151.884	2891.335	3.819%	81.849%
30.0	1324.477	145.238	3036.573	3.652%	85.961%
32.0	1108.484	128.826	3165.399	3.239%	89.608%
34.0	889.270	109.059	3274.458	2.742%	92.695%
36.0	644.140	83.036	3357.494	2.088%	95.046%
38.0	420.138	56.728	3414.222	1.426%	96.652%
40.0	221.189	31.181	3445.403	.784%	97.534%
42.0	72.879	10.695	3456.098	.269%	97.837%
44.0	23.527	3.584	3459.683	.090%	97.939%
46.0	17.916	2.826	3462.509	.071%	98.019%
48.0	17.452	2.844	3465.353	.072%	98.099%
50.0	16.988	2.854	3468.207	.072%	98.180%
52.0	16.763	2.897	3471.104	.073%	98.262%
54.0	16.559	2.938	3474.042	.074%	98.345%
56.0	16.341	2.971	3477.013	.075%	98.429%
58.0	16.144	3.003	3480.016	.075%	98.514%
60.0	15.968	3.033	3483.048	.076%	98.600%
62.0	16.024	3.103	3486.151	.078%	98.688%
64.0	16.235	3.200	3489.352	.080%	98.778%
66.0	16.545	3.315	3492.666	.083%	98.872%
68.0	16.791	3.414	3496.081	.086%	98.969%
70.0	16.917	3.486	3499.567	.088%	99.068%
72.0	16.938	3.533	3503.1	.089%	99.168%
74.0	16.924	3.568	3506.668	.090%	99.269%

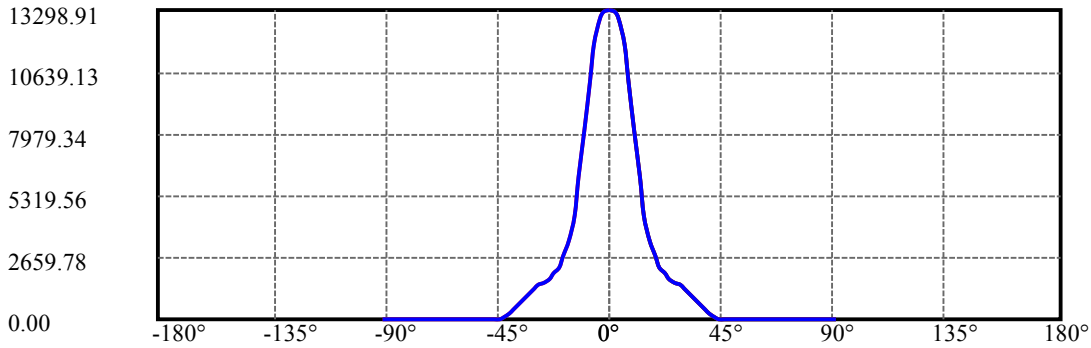
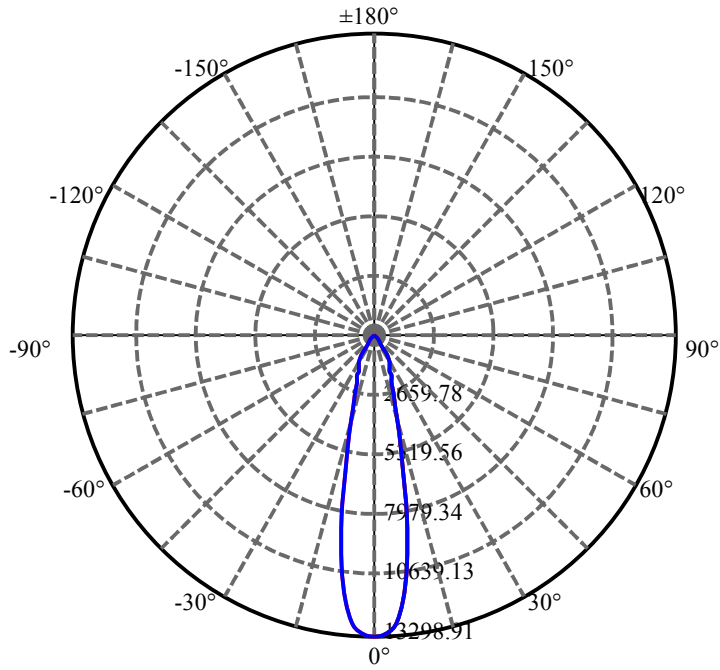
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	16.854	3.586	3510.255	.090%	99.370%
78.0	16.727	3.588	3513.843	.090%	99.472%
80.0	16.474	3.558	3517.401	.089%	99.572%
82.0	16.193	3.517	3520.918	.088%	99.672%
84.0	15.898	3.467	3524.385	.087%	99.770%
86.0	15.560	3.404	3527.789	.086%	99.867%
88.0	14.344	3.144	3530.933	.079%	99.956%
90.0	14.316	1.570	3532.503	.039%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	3036.57	76.35%	85.96%
0-40	3445.40	86.63%	97.53%
0-60	3483.05	87.58%	98.60%
0-90	3530.93	88.78%	99.96%
0-120	3530.93	88.78%	99.96%
0-180	3532.50	88.82%	100.00%
60-90	50.92	1.28%	1.44%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-27.14	2826.00	71.06%	80.00%

ZONAL LUMEN SUMMARY

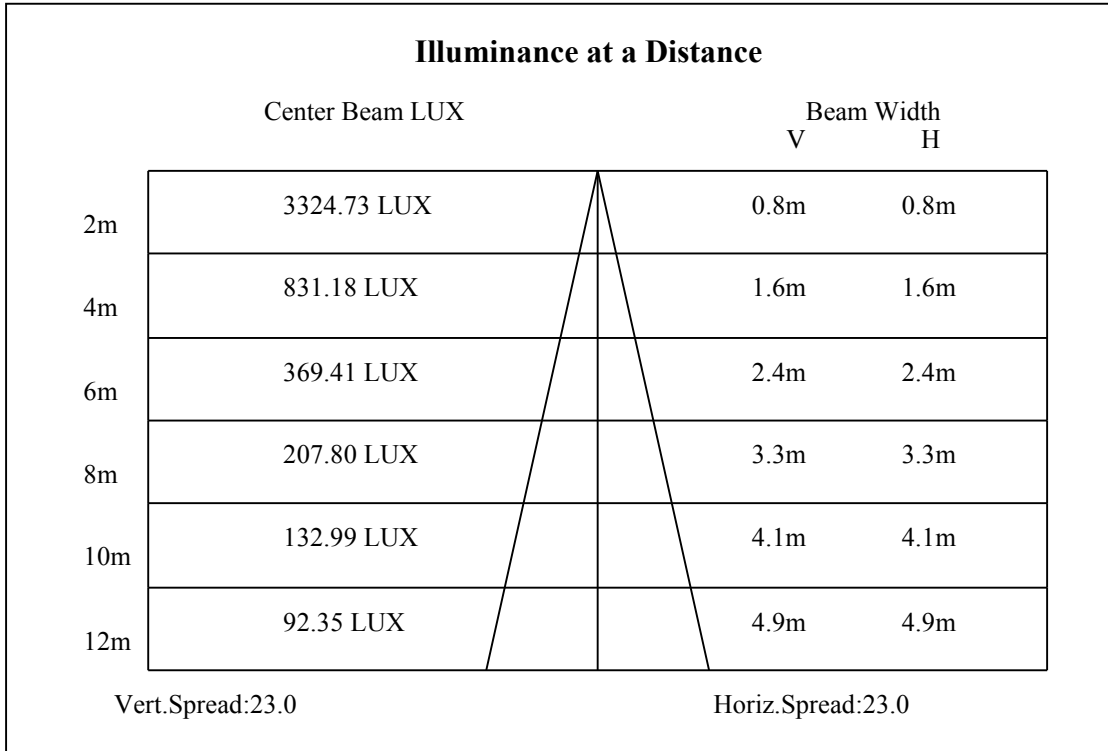
0-10	1202.99
10-20	1068.79
20-30	764.79
30-40	408.83
40-50	22.80
50-60	14.84
60-70	16.52
70-80	17.83
80-90	13.53
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

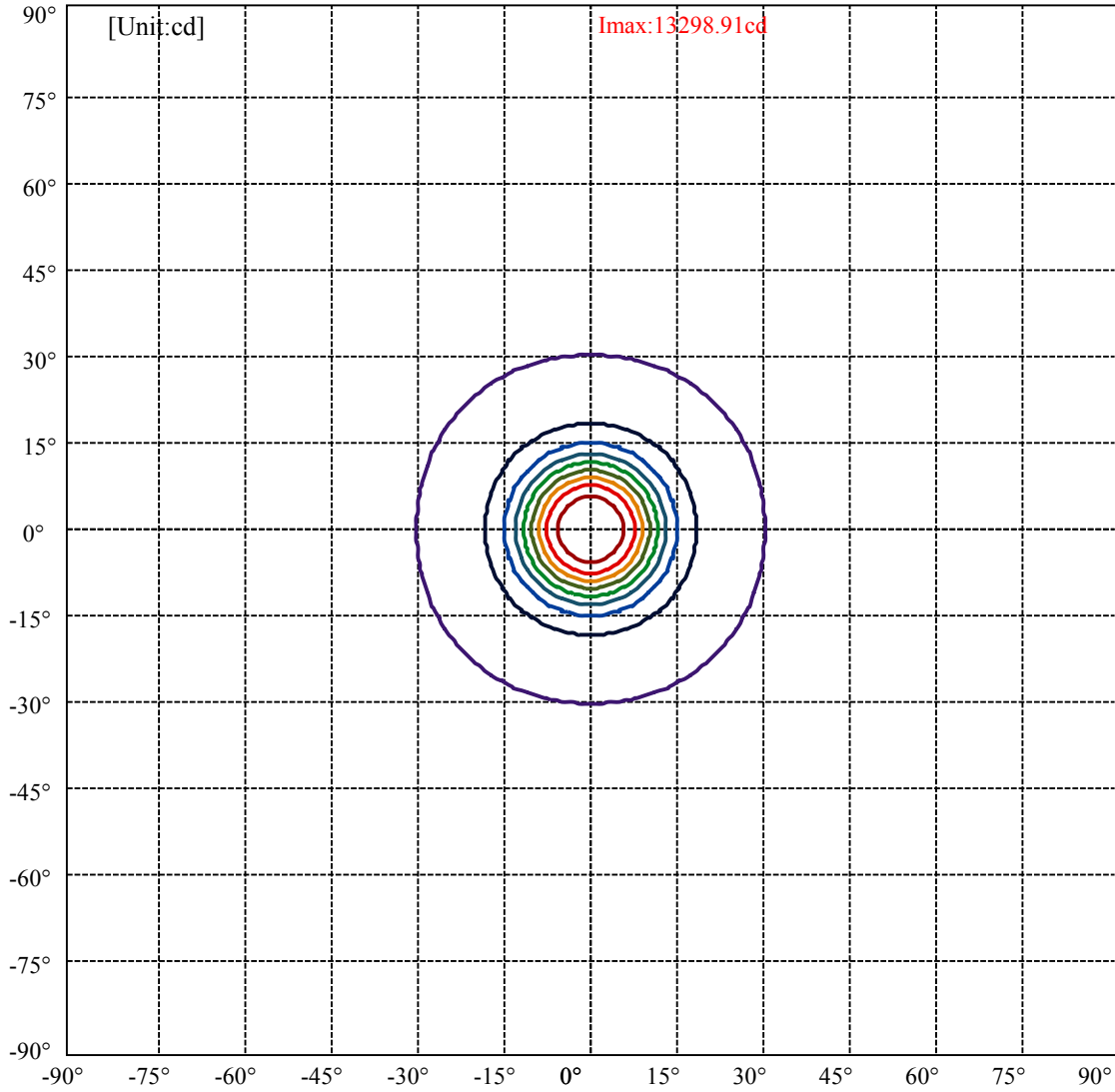


C0(Max): —————
C0/C180: —————
C90/C270: —————

Field angle(10%Imax):C0/180Left:29.9 Right:29.9
:C90/270Left:29.9 Right:29.9

Beam Angle(50%Imax):C0/180Left:11.5 Right:11.5
:C90/270Left:11.5 Right:11.5



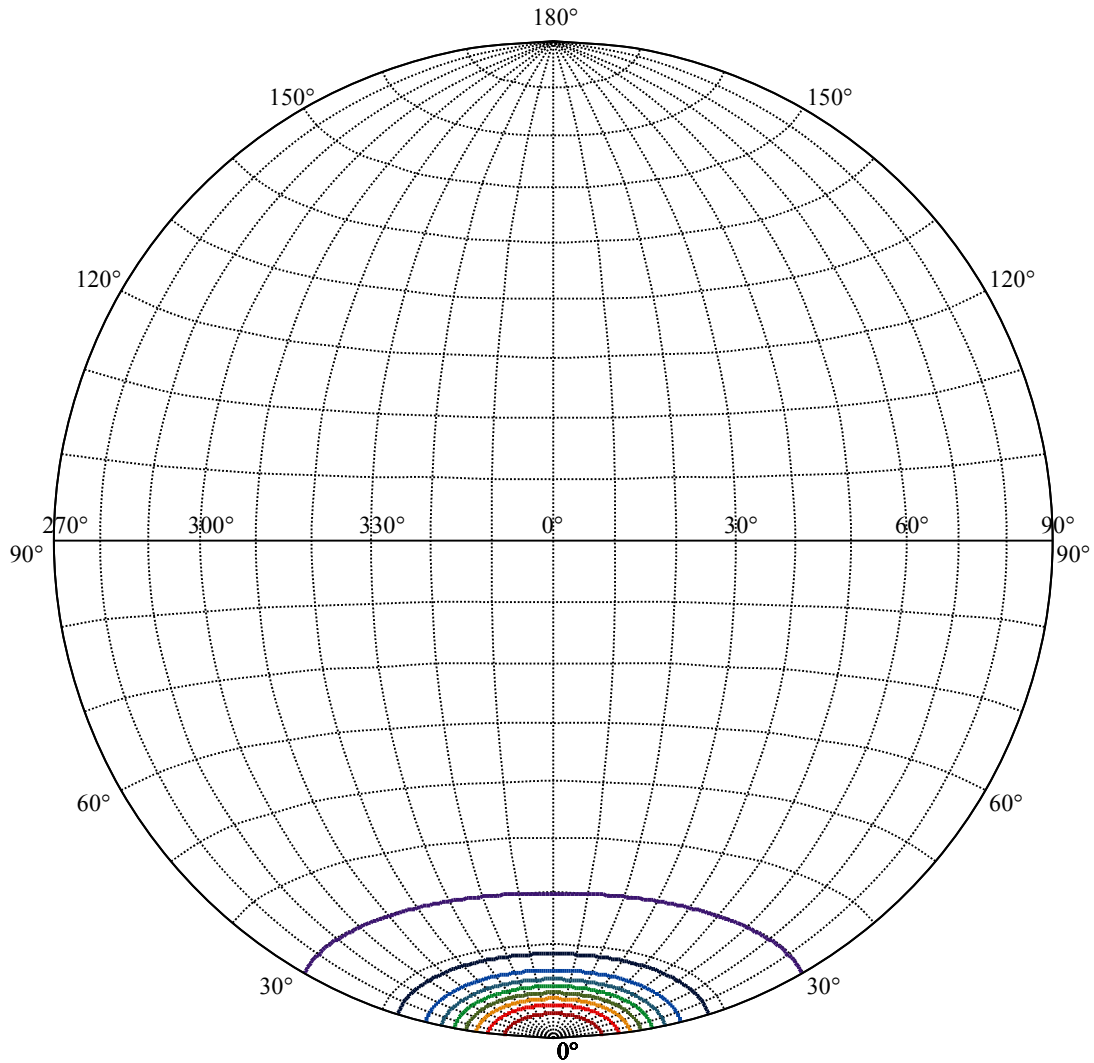


(10%Imax) 1329.89	—
(20%Imax) 2659.78	—
(30%Imax) 3989.67	—
(40%Imax) 5319.56	—
(50%Imax) 6649.45	—
(60%Imax) 7979.34	—
(70%Imax) 9309.23	—
(80%Imax) 10639.1	—
(90%Imax) 11969	—

Equipment:
Temperature(°C): 25.0

Date: 2018/10/11
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.50



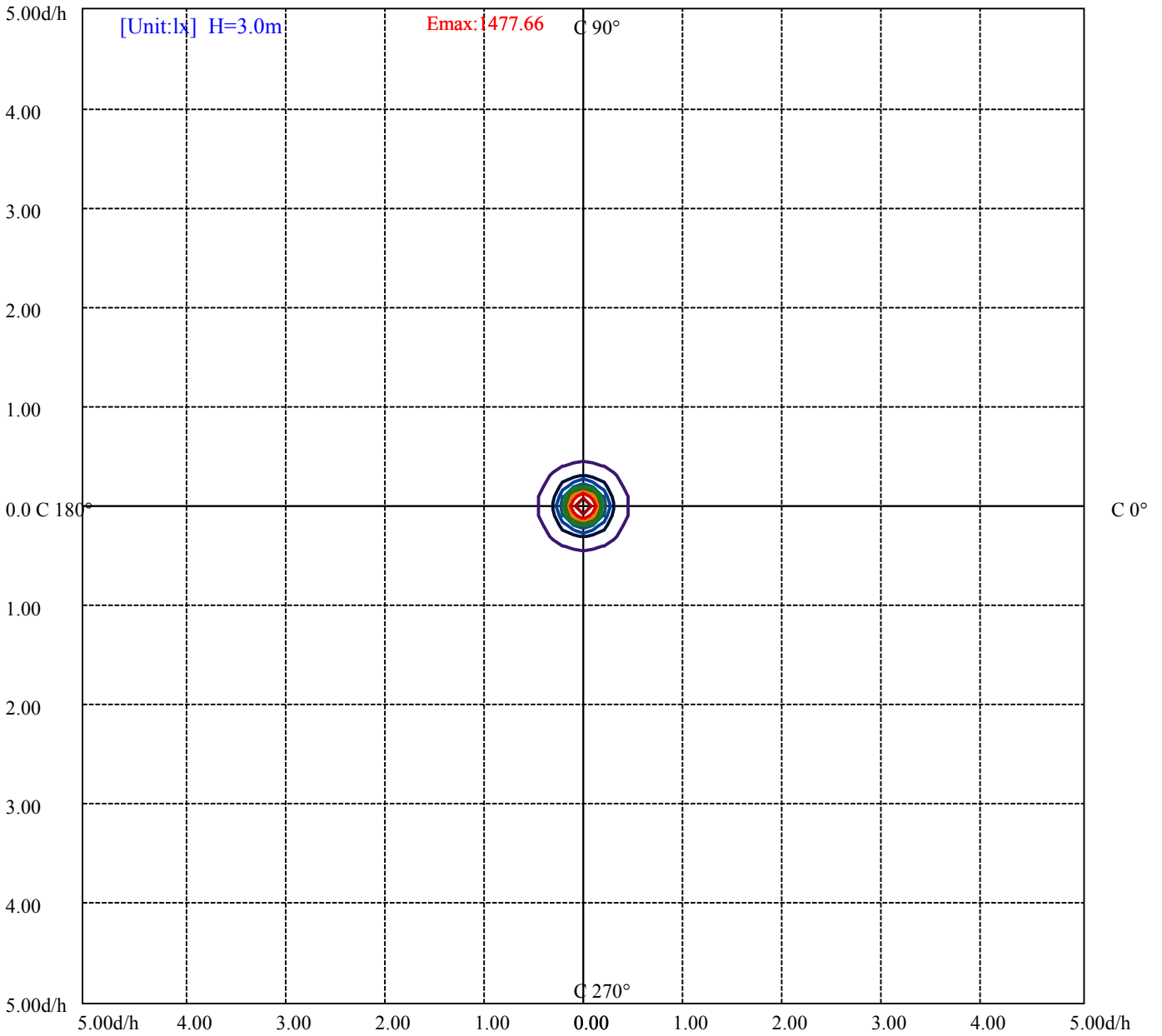
House

[Unit:cd]

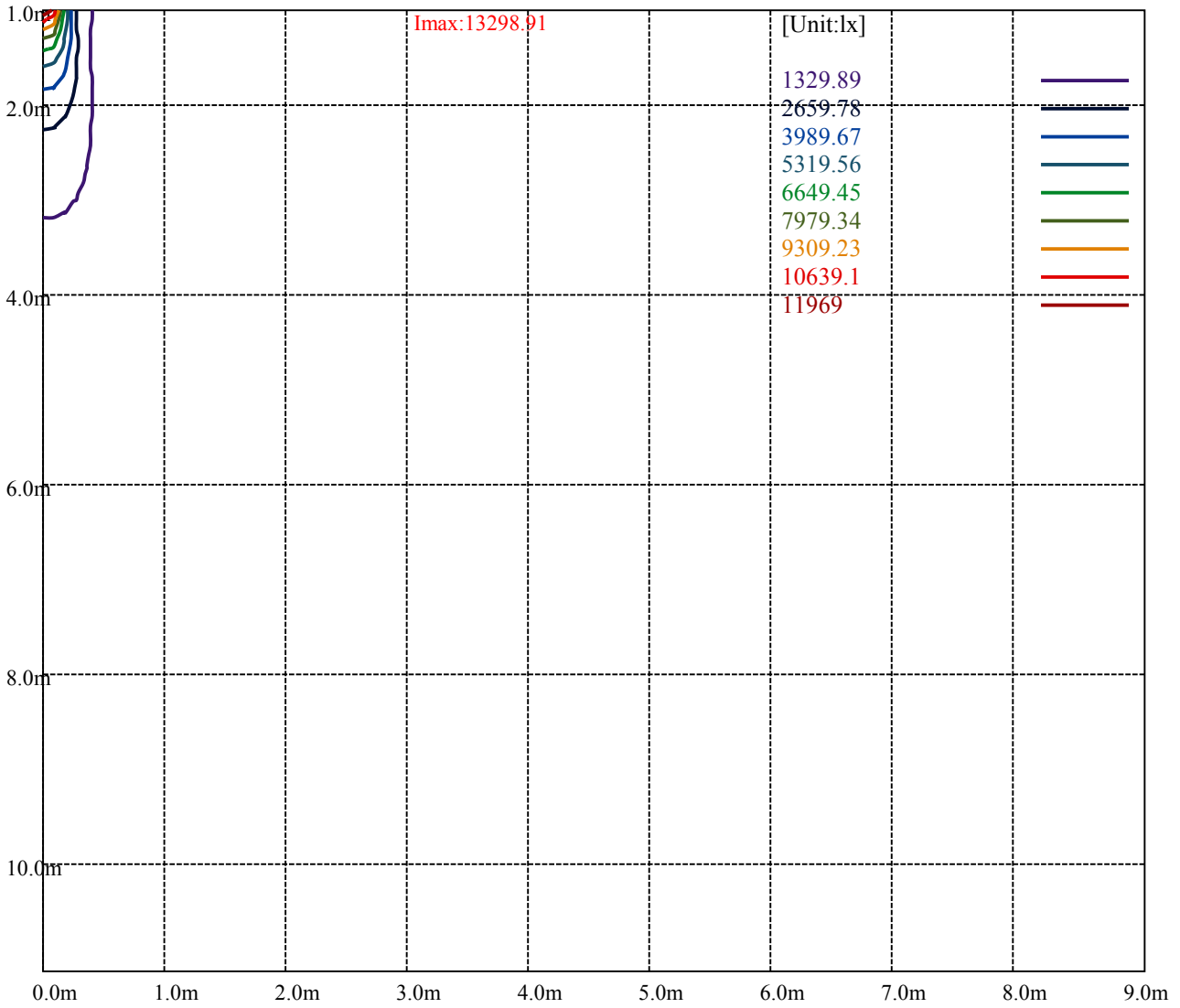
Road

Imax:13298.91

(10%Imax) 1329.89	—
(20%Imax) 2659.78	—
(30%Imax) 3989.67	—
(40%Imax) 5319.56	—
(50%Imax) 6649.45	—
(60%Imax) 7979.34	—
(70%Imax) 9309.23	—
(80%Imax) 10639.1	—
(90%Imax) 11969	—



- (10%Emax) 147.7656 ———
- (20%Emax) 295.5311 ———
- (30%Emax) 443.2967 ———
- (40%Emax) 591.0623 ———
- (50%Emax) 738.8278 ———
- (60%Emax) 886.5933 ———
- (70%Emax) 1034.359 ———
- (80%Emax) 1182.122 ———
- (90%Emax) 1329.889 ———



Luminance Table

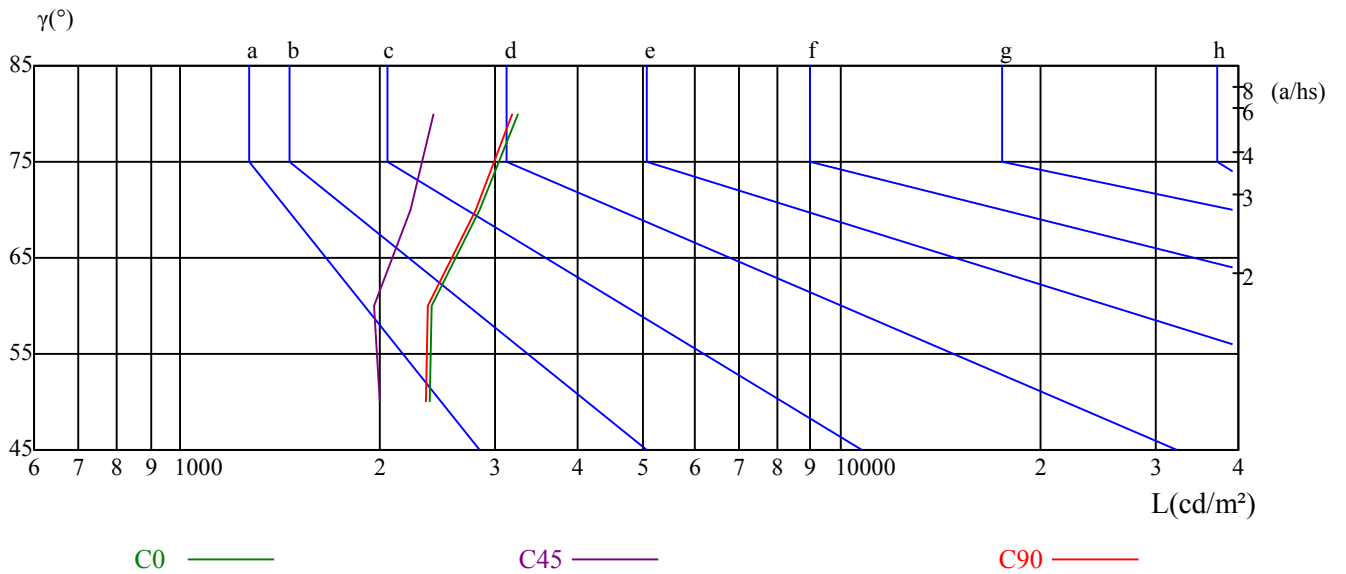
γ	45	50	55	60	65	70	75	80	85
C0	0	2387	0	2407	0	2845	0	3244	0
C45	0	2008	0	1959	0	2228	0	2421	0
C90	0	2360	0	2375	0	2799	0	3180	0

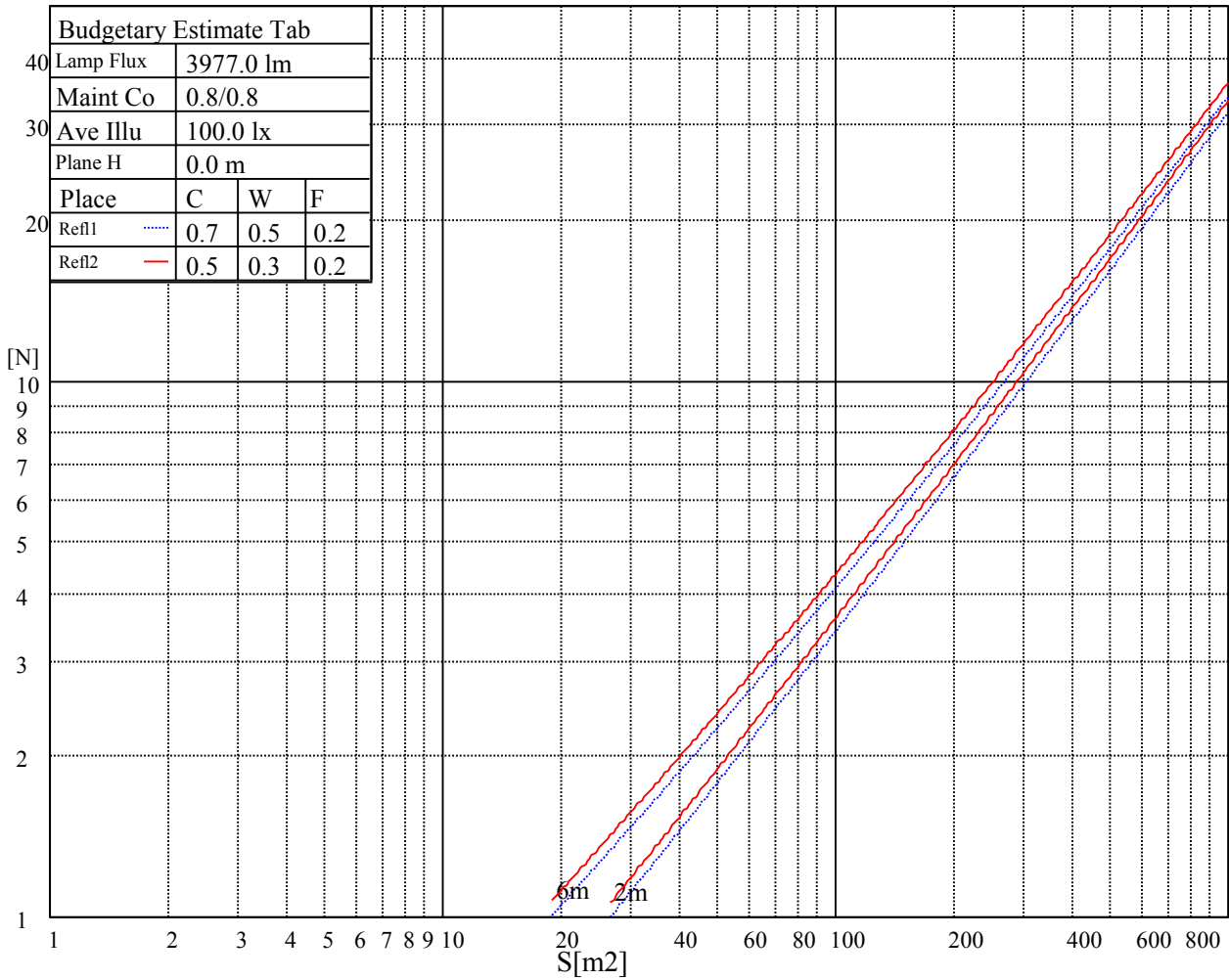
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
6650	6650	6650	11315	11315	11315	30150	30150	30150

Glare Table

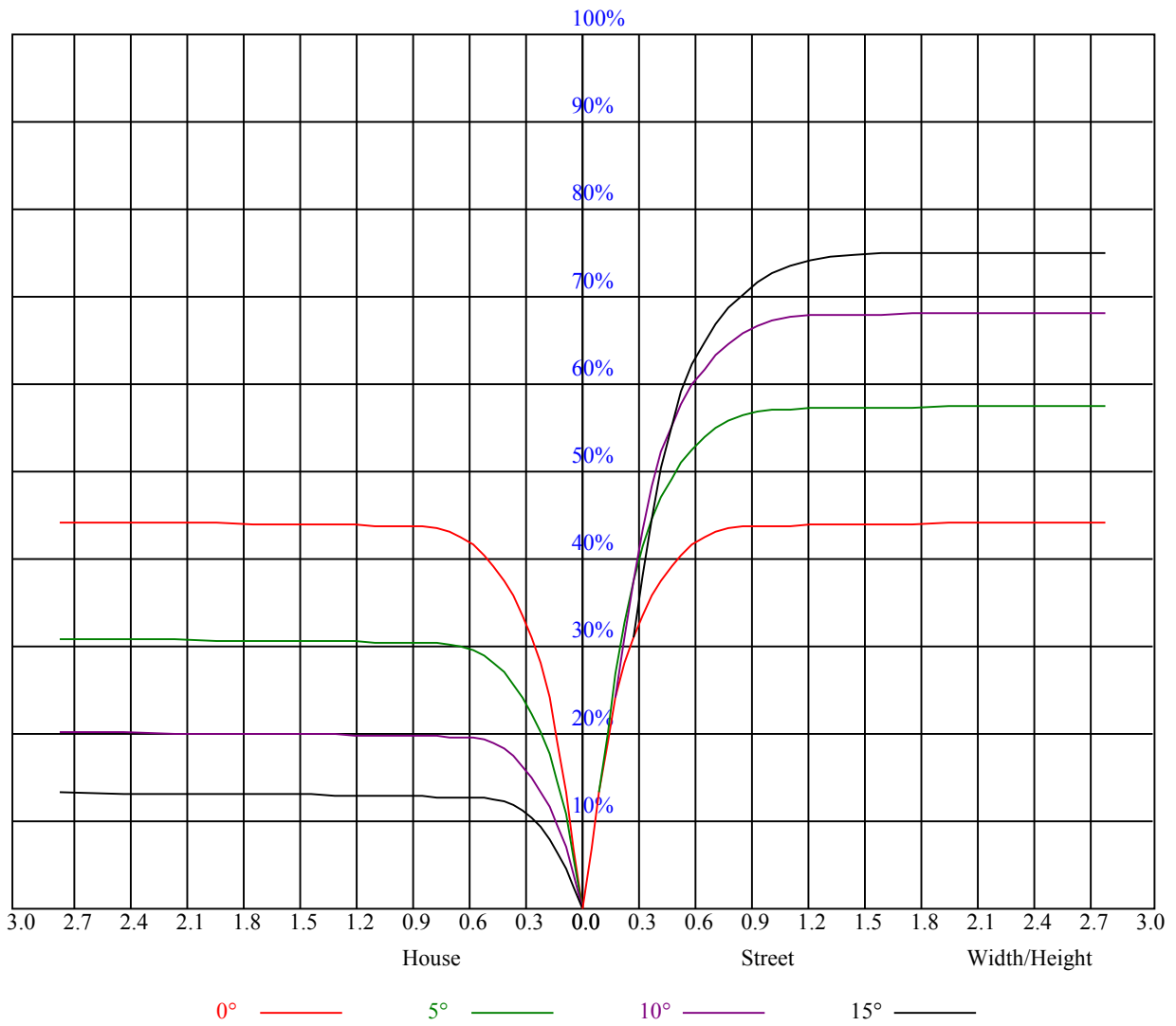
Glare	Quality	Service Values Illuminance(lx)							
		a	b	c	d	e	f	g	h
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





RHOCC	80			70			50			30			10			0
RHOW	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR	COEFFICIENTS OF UTILIZATION RHOFC=20 CU															
0	1.06	1.06	1.06	1.04	1.04	1.04	0.99	0.99	0.99	0.95	0.95	0.95	0.91	0.91	0.91	0.89
1	0.99	0.97	0.96	0.97	0.96	0.94	0.94	0.92	0.91	0.91	0.89	0.88	0.88	0.87	0.86	0.84
2	0.94	0.91	0.88	0.93	0.90	0.87	0.90	0.87	0.85	0.87	0.85	0.84	0.85	0.83	0.82	0.81
3	0.89	0.86	0.83	0.88	0.85	0.82	0.86	0.83	0.81	0.84	0.82	0.80	0.82	0.80	0.78	0.77
4	0.85	0.81	0.78	0.84	0.81	0.78	0.83	0.79	0.77	0.81	0.78	0.76	0.79	0.77	0.75	0.74
5	0.82	0.77	0.74	0.81	0.77	0.74	0.79	0.76	0.73	0.78	0.75	0.73	0.77	0.74	0.72	0.71
6	0.78	0.74	0.71	0.78	0.74	0.71	0.76	0.73	0.70	0.75	0.72	0.70	0.74	0.72	0.69	0.68
7	0.75	0.71	0.68	0.75	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.67	0.72	0.69	0.67	0.66
8	0.73	0.68	0.66	0.72	0.68	0.65	0.71	0.68	0.65	0.70	0.67	0.65	0.70	0.67	0.65	0.64
9	0.70	0.66	0.63	0.70	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.68	0.65	0.63	0.62
10	0.68	0.64	0.61	0.67	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.66	0.63	0.61	0.60



Intensity data(cd)

C/γ(°)	0.0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0
0.0	13325.63	13320.00	13140.00	12442.50	11081.25	9157.50	7036.88	5040.00	3616.88
45.0	13185.00	13156.88	12926.25	12195.00	10800.00	8718.75	6727.50	4815.00	3633.75
90.0	13336.88	13207.50	12768.75	11134.13	9927.00	7660.13	5671.13	4120.31	3159.00
135.0	13348.13	13218.75	12780.00	11677.50	9945.00	7734.38	5838.75	4185.00	3211.88
180.0	13325.63	13168.13	12594.38	11162.25	9477.00	7218.56	5332.50	3929.06	3066.19
225.0	13185.00	13050.00	12521.25	11157.19	9546.75	7347.94	5420.25	3988.69	3092.06
270.0	13336.88	13308.75	13010.63	12161.25	10648.13	8527.50	6575.63	4719.38	3526.88
315.0	13348.13	13314.38	13050.00	12240.00	10746.56	8579.25	6462.00	4681.69	3474.00
360.0	13325.63	13320.00	13140.00	12442.50	11081.25	9157.50	7036.88	5040.00	3616.88
C/γ(°)	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0
0.0	2880.00	2361.94	2050.88	1801.69	1640.25	1521.56	1398.94	1198.69	978.75
45.0	2880.00	2399.63	2079.56	1766.81	1612.69	1501.31	1370.25	1163.25	933.19
90.0	2502.56	2170.13	1875.94	1670.06	1558.13	1442.81	1281.94	1053.84	824.68
135.0	2706.75	2180.25	1902.94	1707.75	1567.13	1458.00	1296.56	1076.63	838.13
180.0	2482.88	2136.94	1852.88	1674.00	1545.75	1436.06	1250.44	1031.40	804.04
225.0	2500.88	2151.56	1862.44	1678.50	1546.31	1434.94	1262.81	1051.31	823.28
270.0	2840.63	2326.50	2014.88	1783.13	1629.56	1510.31	1379.25	1176.19	983.81
315.0	2727.00	2314.69	1989.56	1763.44	1613.81	1496.25	1355.63	1116.56	928.29
360.0	2880.00	2361.94	2050.88	1801.69	1640.25	1521.56	1398.94	1198.69	978.75
C/γ(°)	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0
0.0	743.06	495.56	286.31	110.70	29.70	18.90	18.23	17.61	17.33
45.0	700.88	465.75	288.56	94.05	25.37	17.78	17.27	16.93	16.71
90.0	591.41	371.87	171.39	54.79	20.59	17.49	17.27	16.76	16.59
135.0	602.44	369.00	182.53	49.89	20.59	17.10	16.76	16.54	16.37
180.0	544.61	349.26	154.13	41.74	20.19	18.00	17.38	16.48	16.31
225.0	577.24	367.26	165.15	47.93	20.81	17.55	16.99	16.31	16.09
270.0	717.75	479.81	284.63	95.18	25.59	18.06	17.61	17.33	17.04
315.0	675.73	462.60	236.81	88.76	25.37	18.45	18.11	17.94	17.66
360.0	743.06	495.56	286.31	110.70	29.70	18.90	18.23	17.61	17.33
C/γ(°)	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0
0.0	17.04	16.71	16.54	16.37	16.26	16.82	17.66	18.17	18.28
45.0	16.54	16.37	16.20	16.09	15.98	16.03	16.26	16.54	16.76
90.0	16.37	16.14	15.98	15.81	15.86	15.98	16.03	16.09	16.14
135.0	16.20	16.03	15.92	15.81	15.86	15.98	16.09	16.09	16.09
180.0	16.09	15.92	15.75	15.64	15.86	15.98	16.03	16.09	16.14
225.0	15.86	15.69	15.58	15.47	15.41	15.58	15.86	16.14	16.31
270.0	16.76	16.48	16.20	15.92	15.86	16.31	16.71	16.93	17.04
315.0	17.61	17.38	16.99	16.65	17.10	17.21	17.72	18.28	18.56
360.0	17.04	16.71	16.54	16.37	16.26	16.82	17.66	18.17	18.28
C/γ(°)	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0
0.0	18.34	18.23	18.11	17.94	17.55	17.10	16.76	16.37	14.40
45.0	16.88	16.99	17.04	16.93	16.65	16.31	15.86	15.41	14.34
90.0	16.20	16.26	16.20	16.09	15.86	15.69	15.47	15.13	14.34
135.0	16.03	15.98	15.92	15.86	15.75	15.58	15.41	15.13	14.40
180.0	16.14	16.09	16.03	15.92	15.69	15.53	15.30	15.08	14.34
225.0	16.31	16.31	16.20	16.09	15.81	15.53	15.19	14.91	14.12
270.0	16.99	17.04	16.93	16.76	16.54	16.26	16.03	15.64	14.40
315.0	18.62	18.51	18.39	18.23	17.94	17.55	17.16	16.82	14.40
360.0	18.34	18.23	18.11	17.94	17.55	17.10	16.76	16.37	14.40

Intensity data(cd)

C/γ(°)	90.0
0.0	14.40
45.0	14.29
90.0	14.34
135.0	14.34
180.0	14.34
225.0	14.12
270.0	14.34
315.0	14.34
360.0	14.40